MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2015/2016

TCP2201 OBJECT ORIENTED ANALYSIS AND DESIGN

(All sections/groups)

1st March 2016
2:30 P.M – 4:30 P.M
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of four (4) pages only including the cover page.
2. There are four (4) questions in this paper.
3. Answer **ALL QUESTIONS**.
4. All questions carry equal marks (10 marks) and the distribution of the marks for each sub-question is given.
5. Write your answers in the answer booklet provided.

Question 1

a) For object-oriented software, the conceptual framework is the object model. List four major elements of the model.

[2m]

a) List three benefits of the object model.

[3m]

b) How can one know if a given class or object is well designed? Give five meaningful metrics and explain each meaning.

[5m]

Question 2

a) Briefly explain the terms below:
   i. Object-oriented design
   ii. Object-oriented analysis

[2m]

b) Given the problem description below, identify the use-cases and classes for the software. Give your answer in the form of a:s
   i. Use-case diagram,
   ii. Class diagram

[8m]

The software to be designed is a program that can be used to maintain an address book. An address book holds a collection of entries, each recording a person's first and last names, address, city, state, zip, and phone number.

It must be possible to add a new person to an address book, to edit existing information about a person (except the person's name), and to delete a person. It must be possible to sort the entries in the address book alphabetically by last name, or by ZIP code. It must be possible to print out all the entries in the address book in "mailing label" format.

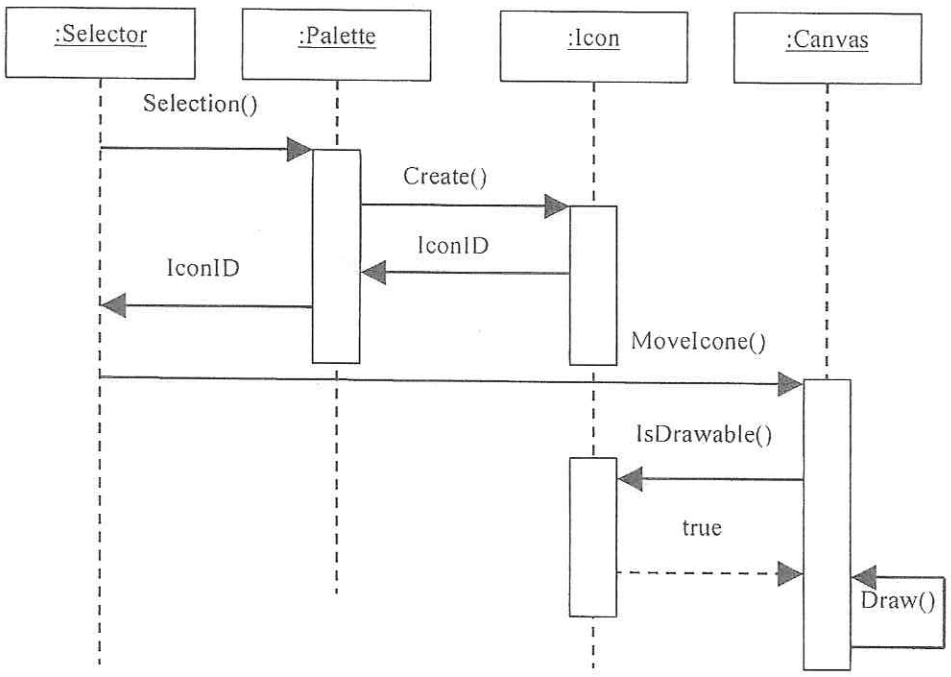
It must be possible to create a new address book, to open a disk file containing an existing address book to close an address book, and to save an address book to a disk file, using standard New, Open, Close, Save and Save As ... File menu options. The program's File menu will also have a Quit option to allow closing all open address books and terminating the program.

Continued ...

Question 3

(a) Convert the sequence diagram below to a collaboration diagram.

[4 mark]



(b) Explain the difference between an "is-a" relationship and a "has-a" relationship using a UML class diagram and its corresponding Java program code.

[6 mark]

Continued ...

Question 4

a) How are design patterns different from algorithms and data structures?

[3m]

b) How are design patterns different from frameworks?

[3m]

c) Consider a multimedia player that has been developed in Java. You are asked to implement the player into a different programming langauge. Which design pattern would you use? Draw a UML class diagram relating the objects in the new and old player together.

[4m]

End of paper